

## CHLORPROPAMIDE - chlorpropamide tablet

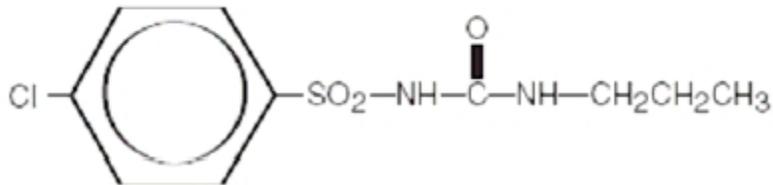
### Rx Only

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### DESCRIPTION

ChlorproPAMIDE is an oral blood-glucose-lowering drug of the sulfonylurea class. ChlorproPAMIDE is a white, crystalline powder that has a slight odor. It is practically insoluble in water, at pH 7.3 (solubility at pH 6 is 2.2 mg/ml). It is soluble in alcohol and moderately soluble in chloroform. Chemically, chlorproPAMIDE is 1-[(*p*-Chlorophenyl)sulfonyl]-3-propylurea and has the structural formula:



Molecular formula: C<sub>10</sub>H<sub>13</sub>ClN<sub>2</sub>O<sub>3</sub>S Molecular weight: 276.74

Each tablet for oral administration contains 100 mg or 250 mg of chlorproPAMIDE, USP. Inactive ingredients are anhydrous lactose, colloidal silicon dioxide, croscarmellose sodium, docusate sodium and sodium benzoate, hypromellose, microcrystalline cellulose, polacrillin potassium, polyethylene glycol 8000, sodium starch glycolate, stearic acid, and FD&C Blue #1.

### CLINICAL PHARMACOLOGY

ChlorproPAMIDE appears to lower the blood glucose acutely by stimulating the release of insulin from the pancreas, an effect dependent upon functioning beta cells in the pancreatic islets. The mechanism by which chlorproPAMIDE lowers blood glucose during long-term administration has not been clearly established. Extra-pancreatic effects may play a part in the mechanism of action of oral sulfonylurea hypoglycemic drugs. While chlorproPAMIDE is a sulfonamide derivative, it is devoid of antibacterial activity. ChlorproPAMIDE may also prove effective in controlling certain patients who have experienced primary or secondary failure to other sulfonylurea agents.

ChlorproPAMIDE does not interfere with the usual tests to detect albumin in the urine. ChlorproPAMIDE is absorbed rapidly from the gastrointestinal tract. Within one hour after a single oral dose, it is readily detectable in the blood, and the level reaches a maximum within two to four hours. It undergoes metabolism in humans and it is excreted in the urine as unchanged drug and as hydroxylated or hydrolyzed metabolites. The biological half-life of chlorproPAMIDE averages about 36 hours. Within 96 hours, 80 to 90% of a single oral dose is excreted in the urine. However, long-term administration of therapeutic doses does not result in undue accumulation in the blood, since absorption and excretion rates become stabilized in about 5 to 7 days after the initiation of therapy. ChlorproPAMIDE exerts a hypoglycemic effect in normal humans within one hour, becoming maximal at 3 to 6 hours and persisting for at least 24 hours. The potency of chlorproPAMIDE is approximately six times that of tolbutamide. Some experimental results suggest that its increased duration of action may be the result of slower excretion and absence of significant deactivation.

### INDICATIONS AND USAGE

ChlorproPAMIDE is indicated as an adjunct to diet to lower the blood glucose in patients with non-insulin-dependent diabetes mellitus (type II) whose hyperglycemia cannot be controlled by diet alone.

In initiating treatment for non-insulin-dependent diabetes, diet should be emphasized as the primary form of treatment. Caloric restriction and weight loss are essential in the obese diabetic patient. Proper dietary management alone may be effective in controlling the blood glucose and symptoms of hyperglycemia. The importance of regular physical activity should also be stressed, and cardiovascular risk factors should be identified and corrective measures taken where possible.

If this treatment program fails to reduce symptoms and/or blood glucose, the use of an oral sulfonylurea or insulin should be considered. Use of chlorproPAMIDE must be viewed by both the physician and patient as a treatment in addition to diet, and not as a substitute for diet or as a convenient mechanism for avoiding dietary restraint.

Furthermore, loss of blood glucose control on diet alone may be transient, thus requiring only short-term administration of chlorproPAMIDE.

During maintenance programs, chlorproPAMIDE should be discontinued if satisfactory lowering of blood glucose is no longer achieved. Judgments should be based on regular clinical and laboratory evaluations.

In considering the use of chlorproPAMIDE in asymptomatic patients, it should be recognized that controlling the blood glucose in non-insulin-dependent diabetes has not been definitely established to be effective in preventing the long-term cardiovascular or neural complications of diabetes.

## CONTRAINDICATIONS

ChlorproPAMIDE is contraindicated in patients with:

1. Known hypersensitivity to the drug.
2. Diabetic ketoacidosis, with or without coma. This condition should be treated with insulin.

## WARNINGS

### SPECIAL WARNING ON INCREASED RISK OF CARDIOVASCULAR MORTALITY

The administration of oral hypoglycemic drugs has been reported to be associated with increased cardiovascular mortality as compared to treatment with diet alone or diet plus insulin. This warning is based on the study conducted by the UniversityGroup Diabetes Program (UGDP), a long-term prospective clinical trial designed to evaluate the effectiveness of glucose-lowering drugs in preventing or delaying vascular complications in patients with non-insulin-dependent diabetes. The study involved 823 patients who were randomly assigned to one of four treatment groups (*Diabetes*, 19, [supp. 2]: 747-830, 1970).

UGDP reported that patients treated for 5 to 8 years with diet plus a fixed dose of tolbutamide (1.5 grams per day) had a rate of cardiovascular mortality approximately 2 1/2 times that of patients treated with diet alone. A significant increase in total mortality was not observed, but the use of tolbutamide was discontinued based on the increase in cardiovascular mortality, thus limiting the opportunity for the study to show an increase in overall mortality. Despite controversy regarding the interpretation of these results, the findings of the UGDP study provide an adequate basis for this warning. The patient should be informed of the potential risks and advantages of chlorproPAMIDE and of alternative modes of therapy. Although only one drug in the sulfonylurea class (tolbutamide) was included in this study, it is prudent from a safety standpoint to consider that this warning may also apply to other oral hypoglycemic drugs in this class, in view of their close similarities in mode of action and chemical structure.

## PRECAUTIONS

### General

#### *Hypoglycemia*

All sulfonylurea drugs are capable of producing severe hypoglycemia. Proper patient selection, dosage, and instructions are important to avoid hypoglycemic episodes. Renal or hepatic insufficiency may cause elevated blood levels of chlorproPAMIDE and the latter may also diminish gluconeogenic capacity, both of which increase the risk of serious hypoglycemic reactions. Elderly, debilitated or malnourished patients, and those with adrenal or pituitary insufficiency are particularly susceptible to the hypoglycemic action of glucose-lowering drugs. Hypoglycemia may be difficult to recognize in the elderly, and in people who are taking beta-adrenergic blocking drugs. Hypoglycemia is more likely to occur when caloric intake is deficient, after severe or prolonged exercise, when alcohol is ingested or when more than one glucose-lowering drug is used.

Because of the long half-life of chlorproPAMIDE, patients who become hypoglycemic during therapy require careful supervision of the dose and frequent feedings for at least 3 to 5 days. Hospitalization and intravenous glucose may be necessary.

#### *Loss of control of blood glucose*

When a patient stabilized on any diabetic regimen is exposed to stress such as fever, trauma, infection, or surgery, a loss of control may occur. At such times, it may be necessary to discontinue chlorproPAMIDE and administer insulin.

The effectiveness of any oral hypoglycemic drug, including chlorproPAMIDE, in lowering blood glucose to a desired level decreases in many patients over a period of time, which may be due to progression of the severity of the diabetes or to diminished responsiveness to the drug. This phenomenon is known as secondary failure, to distinguish it from primary failure in which the drug is ineffective in an individual patient when first given.

#### *Geriatric Use*

The safety and effectiveness of chlorproPAMIDE in patients aged 65 and over has not been properly evaluated in clinical studies. Adverse event reporting suggests that elderly patients may be more prone to developing hypoglycemia and/or hyponatremia when using chlorproPAMIDE. Although the underlying mechanisms are unknown, abnormal renal function, drug interaction and poor nutrition appear to contribute to these events.

### Information For Patients

Patients should be informed of the potential risks and advantages of chlorproPAMIDE and of alternative modes of therapy. They should also be informed about the importance of adherence to dietary instructions, of a regular exercise program, and of regular testing of the urine and/or blood glucose.

The risks of hypoglycemia, its symptoms and treatment, and conditions that predispose to its development should be explained to patients and responsible family members. Primary and secondary failure should also be explained.

Patients should be instructed to contact their physician promptly if they experience symptoms of hypoglycemia or other adverse reactions.

### **Laboratory Tests**

Blood and urine glucose should be monitored periodically. Measurement of glycosylated hemoglobin may be useful.

### **Drug Interactions**

The hypoglycemic action of sulfonylurea may be potentiated by certain drugs including nonsteroidal anti-inflammatory agents and other drugs that are highly protein bound, salicylates, sulfonamides, chloramphenicol, probenecid, coumarins, monoamine oxidase inhibitors, and beta adrenergic blocking agents. When such drugs are administered to a patient receiving chlorproPAMIDE, the patient should be observed closely for hypoglycemia. When such drugs are withdrawn from a patient receiving chlorproPAMIDE, the patient should be observed closely for loss of control.

Certain drugs tend to produce hyperglycemia and may lead to loss of control. These drugs include the thiazides and other diuretics, corticosteroids, phenothiazines, thyroid products, estrogens, oral contraceptives, phenytoin, nicotinic acid, sympathomimetics, calcium channel blocking drugs, and isoniazid. When such drugs are administered to a patient receiving chlorproPAMIDE, the patient should be closely observed for a loss of control. When such drugs are withdrawn from a patient receiving chlorproPAMIDE, the patient should be observed closely for hypoglycemia.

Since animal studies suggest that the action of barbiturates may be prolonged by therapy with chlorproPAMIDE, barbiturates should be employed with caution. In some patients, a disulfiram-like reaction may be produced by the ingestion of alcohol.

A potential interaction between oral miconazole and oral hypoglycemic agents leading to severe hypoglycemia has been reported. Whether this interaction also occurs with the intravenous, topical or vaginal preparations of miconazole is not known.

### **Carcinogenesis, Mutagenesis, Impairment of Fertility**

Studies with chlorproPAMIDE have not been conducted to evaluate carcinogenic or mutagenic potential.

Rats treated with continuous chlorproPAMIDE therapy for 6 to 12 months showed varying degrees of suppression of spermatogenesis at a dose level of 250 mg/kg (five times the human dose based on body surface area). The extent of suppression seemed to follow that of growth retardation associated with chronic administration of high-dose chlorproPAMIDE in rats. The human dose of chlorproPAMIDE is 500 mg/day (300 mg/M<sup>2</sup>). Six and 12-month toxicity work in the dog and rat, respectively, indicates the 150 mg/kg is well tolerated. Therefore, the safety margins based upon body-surface-area comparisons are three times human exposure in the rat and 10 times human exposure in the dog.

### **Pregnancy**

Teratogenic effects: Pregnancy Category C

Animal reproductive studies have not been conducted with chlorproPAMIDE. It is also not known whether chlorproPAMIDE can cause fetal harm when administered to a pregnant woman or can effect reproduction capacity. ChlorproPAMIDE should be given to a pregnant woman only if clearly needed.

Because recent information suggests that abnormal blood glucose levels during pregnancy are associated with a higher incidence of congenital abnormalities, many experts recommend that insulin be used during pregnancy to maintain blood glucose levels as close to normal as possible.

Nonteratogenic effects

Prolonged severe hypoglycemia (4 to 10 days) has been reported in neonates born to mothers who were receiving a sulfonylurea drug at the time of delivery. This has been reported more frequently with the use of agents with prolonged half-lives. If chlorproPAMIDE is used during pregnancy, it should be discontinued at least one month before the expected delivery date.

### **Nursing Mothers**

An analysis of a composite of two samples of human breast milk each taken five hours after ingestion of 500 mg of chlorproPAMIDE by a patient, revealed a concentration of 5 mcg/mL. For reference, the normal peak blood level of chlorproPAMIDE after a single 250 mg dose is 30 mcg/mL. Therefore, it is not recommended that a woman breast feed while taking this medication.

### **Pediatric Use**

Safety and effectiveness in pediatric patients have not been established.

## **ADVERSE REACTIONS**

**Hypoglycemia:** See **PRECAUTIONS** and **OVERDOSAGE** sections.

**Gastrointestinal Reactions:** Cholestatic jaundice may occur rarely; chlorproPAMIDE should be discontinued if this occurs.

Gastrointestinal disturbances are the most common reactions; nausea has been reported in less than 5% of patients and diarrhea, vomiting, anorexia, and hunger in less than 2%. Other gastrointestinal disturbances have occurred in less than 1% of patients including proctocolitis. They tend to be dose related and may disappear when dosage is reduced.

**Dermatologic Reactions:** Pruritus has been reported in less than 3% of patients. Other allergic skin reactions, e.g., urticaria and maculopapular eruptions have been reported in approximately 1% or less of patients. These may be transient and may disappear despite continued use of chlorproPAMIDE; if skin reactions persist the drug should be discontinued. Porphyria cutanea tarda and photosensitivity reactions have been reported with sulfonylureas. Skin eruptions rarely progressing to erythema multiforme and exfoliative dermatitis have also been reported.

**Hematologic Reactions:** Leukopenia, agranulocytosis, thrombocytopenia, hemolytic anemia, aplastic anemia, pancytopenia, and eosinophilia have been reported with sulfonylureas.

**Metabolic Reactions:** Hepatic porphyria and disulfiram-like reactions have been reported with chlorproPAMIDE. See **Drug Interactions** section.

**Endocrine Reactions:** On rare occasions, chlorproPAMIDE has caused a reaction identical to the syndrome of inappropriate antidiuretic hormone (ADH) secretion. The features of this syndrome result from excessive water retention and include hyponatremia, low serum osmolality, and high urine osmolality. This reaction has also been reported for other sulfonylureas.

## OVERDOSAGE

Overdosage of sulfonylureas including chlorproPAMIDE can produce hypoglycemia. Mild hypoglycemic symptoms without loss of consciousness or neurologic findings should be treated aggressively with oral glucose and adjustments in drug dosage and/or meal patterns. Close monitoring should continue until the physician is assured that the patient is out of danger. Severe hypoglycemic reactions with coma, seizure, or other neurological impairment occur infrequently but constitute medical emergencies requiring immediate hospitalization. If hypoglycemic coma is diagnosed or suspected, the patient should be given a rapid intravenous injection of concentrated (50%) glucose solution. This should be followed by a continuous infusion of a more dilute (10%) glucose solution at a rate that will maintain the blood glucose at a level above 100 mg/dL. Patients should be closely monitored for a minimum of 24 to 48 hours since hypoglycemia may recur after apparent clinical recovery.

## DOSAGE AND ADMINISTRATION

There is no fixed dosage regimen for the management of diabetes mellitus with chlorproPAMIDE or any other hypoglycemic agent. In addition to the usual monitoring of urinary glucose, the patient's blood glucose must also be monitored periodically to determine the minimum effective dose for the patient; to detect primary failure, i.e., inadequate lowering of blood glucose at the maximum recommended dose of medication; and to detect secondary failure, i.e., loss of an adequate blood glucose lowering response after an initial period of effectiveness. Glycosylated hemoglobin levels may also be of value in monitoring the patient's response to therapy. Short-term administration of chlorproPAMIDE may be sufficient during periods of transient loss of control in patients usually controlled well on diet.

The total daily dosage is generally taken at a single time each morning with breakfast.

Occasionally cases of gastrointestinal intolerance may be relieved by dividing the daily dosage.

**A LOADING OR PRIMING DOSE IS NOT NECESSARY AND SHOULD NOT BE USED.**

## Initial Therapy

1. The mild to moderately severe, middle-aged, stable non-insulin-dependent diabetic patient should be started on 250 mg daily. In elderly patients, debilitated or malnourished patients, and patients with impaired renal or hepatic function, the initial and maintenance dosing should be conservative to avoid hypoglycemic reactions (see **PRECAUTIONS** section). Older patients should be started on smaller amounts of chlorproPAMIDE, in the range of 100 to 125 mg daily.
2. No transition period is necessary when transferring patients from other oral hypoglycemic agents to chlorproPAMIDE. The other agent may be discontinued abruptly and chlorproPAMIDE started at once. In prescribing chlorproPAMIDE, due consideration must be given to its greater potency. Many mild to moderately severe, middle-aged, stable non-insulin-dependent diabetic patients receiving insulin can be placed directly on the oral drug and their insulin abruptly discontinued. For patients requiring more than 40 units of insulin daily, therapy with chlorproPAMIDE may be initiated with a 50% reduction in insulin for the first few days, with subsequent further reductions dependent upon the response. During the initial period of therapy with chlorproPAMIDE, hypoglycemic reactions may occasionally occur, particularly during the transition from insulin to the oral drug. Hypoglycemia within 24 hours after withdrawal of the intermediate or long-acting types of insulin will usually prove to be the result of insulin carry-over and not primarily due to the effect of chlorproPAMIDE. During the insulin withdrawal period, the patient should test his urine for sugar and ketone bodies at least three times daily and report the results frequently to his physician. If they are abnormal, the physician should be notified immediately. In some cases, it may be advisable to consider hospitalization during the transition period. Five to seven days after the initial therapy, the blood level of chlorproPAMIDE reaches a plateau. Dosage may subsequently be adjusted upward or downward by increments of not more than 50 to 125 mg at intervals of three to five days to obtain optimal control. More frequent adjustments are usually undesirable.

**Maintenance Therapy**

Most moderately severe, middle-aged, stable non-insulin-dependent diabetic patients are controlled by approximately 250 mg daily. Many investigators have found that some milder diabetics do well on daily doses of 100 mg or less. Many of the more severe diabetics may require 500 mg daily for adequate control. PATIENTS WHO DO NOT RESPOND COMPLETELY TO 500 MG DAILY WILL USUALLY NOT RESPOND TO HIGHER DOSES. MAINTENANCE DOSES ABOVE 750 MG DAILY SHOULD BE AVOIDED.

**HOW SUPPLIED**

ChlorproPAMIDE Tablets, USP:

100 mg	Blue, round, scored tablets in bottles of 100, 500, and 1000. Debossed PLIVA 372
250 mg	Blue, round, scored tablets in bottles of 100, 250, 500, and 1000. Debossed PLIVA 373

Dispense in a well-closed container.

Store at 20° to 25°C (68° to 77°F) [See USP Controlled Room Temperature].

Manufactured by PLIVA®, Inc., Pomona, NY 10970

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